Terms of Reference
Integrated digital decision-support tool for community health workers in Indonesia

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Abbreviations and Definitions

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<th>Abbreviation</th>
<th>Definition</th>
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<tr>
<td>APIs</td>
<td>Application Programming Interfaces</td>
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<tr>
<td>AWS</td>
<td>Amazon Web Services</td>
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<tr>
<td>BMGF</td>
<td>Bill and Melinda Gates Foundation</td>
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<tr>
<td>Cadre</td>
<td>Community health worker (also known as <em>kader</em>)</td>
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<tr>
<td>CQI</td>
<td>Continuous quality improvement</td>
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<tr>
<td>Dinkes</td>
<td>Department of Health</td>
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<td>DTO</td>
<td>Digital Transformation Office, Ministry of Health</td>
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<tr>
<td>EoI</td>
<td>Expressions of Interest</td>
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<td>HCD</td>
<td>Human-centered design</td>
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<td>ILP</td>
<td>Integration of Primary Health Services</td>
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<tr>
<td>IT</td>
<td>Information technology</td>
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<td>MoH</td>
<td>Ministry of Health</td>
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<td>PHC</td>
<td>Primary health care</td>
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<tr>
<td>PoC</td>
<td>Proof of Concept</td>
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<tr>
<td>Pusdatin</td>
<td>Center for Data and Information Technology, Ministry of Health</td>
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<td>Puskesmas</td>
<td>Public health center</td>
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<tr>
<td>Pustu</td>
<td>Auxiliary public health center</td>
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<tr>
<td>PWS Kesehatan</td>
<td>Local area health monitoring platform</td>
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<td>ROI</td>
<td>Return on investment</td>
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<td>Simpus</td>
<td>Public health center management information system</td>
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<tr>
<td>ToR</td>
<td>Terms of Reference</td>
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<tr>
<td>UI</td>
<td>User interface</td>
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<td>UX</td>
<td>User experience</td>
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Background

1. Indonesia's diverse and sprawling archipelago presents unique challenges to its health care system, particularly in providing consistent and effective primary health care (PHC) across its vast rural and remote areas. Community health workers, locally known as cadres or *kader*, play a pivotal role in bridging the gap between the community and the health care system. These cadres are often the first point of contact and are crucial in delivering health services and education, particularly for preventive care and early detection of diseases. However, the effectiveness of cadres can vary significantly due to differences in training, resources, and support mechanisms available to them. To address these disparities and enhance the delivery of health care services, there is a pressing need for innovative solutions that empower cadres with the tools they need to effectively serve their communities.

2. The deployment of a digital tool tailored for cadres offers a promising solution to these challenges. This tool would not only facilitate better health outcomes, by providing structured and evidence-based decision-support mechanisms, but also enhance the learning and operational efficiency of cadres. By incorporating data-driven recommendations, the tool can guide cadres through complex care protocols in a user-friendly manner, ensuring that patients receive timely and appropriate care. Specifically, it can support a range of health areas and programs across the life course—including antenatal care to address stunting and growth issues, family planning uptake, and the management of prevalent diseases such as malaria, tuberculosis, and noncommunicable diseases.

3. Moreover, this digital tool can function as a continuous learning platform, enabling cadres to update their knowledge and skills as service guidelines and technologies evolve. It can also foster a more cohesive health community by enabling the sharing of insights and best practices among cadres across different regions. This initiative aligns with the Indonesian government's ongoing efforts to digitize health care services and improve accessibility. This promises not only to enhance the efficiency of health workers, but also to ensure equitable health access across the nation's socio-economic spectrum. Therefore, the implementation of this digital tool stands as a strategic imperative to empower community health workers and optimize primary health care services in Indonesia.

4. Recent studies provide quantitative support for the effectiveness of such digital interventions in Indonesia. For instance, a large-scale evaluation of a digital health real-time monitoring platform showed significant improvements in national immunization campaign coverage, demonstrating that digital tools can enhance service delivery and public health outcomes (Jusril et al., 2020). Another study found that a digital health intervention for the Healthy Indonesia Program
with a Family Approach effectively supported community health workers in East Java, providing a solid foundation for digital health initiatives (Prasiska & Yaqin, 2023). These findings underscore the potential of digital tools to significantly improve health care delivery by community health workers in Indonesia.

5. **The development of this digital tool is informed by human-centered design principles, building on prior work conducting extensive field research in Surabaya, East Java, and Keerom, Papua.** This previous work involved crafting detailed user personas and mapping user journeys to identify critical pain points faced by cadres in these diverse settings. The resulting prototypes highlighted specific user needs and proposed solutions that are directly integrated into the design of the new digital tool. This ensures that the tool is not only functional but also highly tailored to the actual conditions and challenges encountered by cadres on the ground. By grounding the tool's design in real-world user experiences and needs, it is positioned to be more intuitive and effective, enhancing user adoption and overall impact on health service delivery.

Figure 1. Overview of systems mapping through human-centered design (HCD).

6. **A key feature of this tool is its decision-support mechanism, which provides real-time guidance to cadres during their interactions with people.** Whether during home visits or sessions at local health posts (posyandu), the tool helps cadres determine the necessity for further medical care based on the health data entered. This real-time analysis aids in making immediate decisions, thus optimizing the health outcomes for the communities they serve. By leveraging this decision-support system, cadres can offer more precise and timely recommendations, reducing unnecessary referrals and focusing health care
resources where they are most needed. This feature not only enhances the efficiency of primary health care services but also ensures that patients receive the right level of care at the right time.

7. **Furthermore, the digital tool is supported by a comprehensive supervision and continuous quality improvement (CQI) strategy as part of the Integration of Primary Health Services (ILP) program.** This approach aims to improve the health status of Indonesians by enhancing the quality of care at the community level and increasing the efficiency of the health system overall. An integral component of this strategy is the development of referral linkages from community settings to health care facilities, ensuring a seamless continuum of care. The data generated will be used for cost modelling, to help estimate the financial resources required for scaling up the initiative and calculating the potential return on investment (ROI). This financial analysis component is critical for planning and securing sustainable funding for the program, ensuring that it can be effectively expanded to meet the needs of communities across Indonesia.

**Objective**

To assist the cadres in their journey and equip them with a performant digital tool, motivating the cadres and enabling them to perform better through decision-support features, reinforcement of learning, and data integration with existing platforms to ensure effective referral linkage between community-level and health care facility-level. This will be achieved by focusing on the two following deliverable areas:

- Develop and maintain an integrated digital tool following recommendations from previous HCD work (user personae, user journey recommendation, system mapping, prototype UI/UX), with decision-support mechanisms based on primary health care data-driven recommendations, and reinforcement of cadre knowledge through learning content delivery.
- Address data integration issues by following data regulations and standards issued by the Ministry of Health (MoH) and ensuring future-proof data synchronisation with local health care facilities by adopting mandated data standards from the MoH.

Through these objectives, the project aims to produce a functioning proof of concept (PoC) digital tool that can be deployed and tested by the cadres in their daily journey. This will improve the cadres’ experience and address their pain points to contribute to the impacts defined in the theory of change.
Requirements

PATH is seeking technical and financial proposals to propose and deploy a solution addressing the aforementioned points for the Primary Health Care Transformation in Indonesia project financed by the Bill and Melinda Gates Foundation.

- Produce a working digital tool that can be deployed on mobile devices (iOS and Android).
- The tool should take advantage of previous HCD work as mentioned above. The HCD work output will be provided in full to the consultant/firm sending in an expression of interest (EoI). The consultant/firm is expected to take on previously designed low-fidelity Figma prototypes to produce a working digital version and continuously iterate development on that version based on feedback received.
- The tool must have a decision-support mechanism whereby it can automatically suggest recommended courses of action based on data entered, according to PHC guidelines.
- The tool must be easy to use, without latency issues, and compatible with older mobile devices.
- The tool must be able to work fully without internet and have asynchronous capabilities, whereby when the mobile device is connected to internet, it can send the previously collected data and receive new data.
- Work with PATH’s technical advisor to ensure all features produced.
- Work with PATH’s continuous learning team to add in reinforcement of learning content addressed to cadres.
- Work with the Indonesia MoH, especially their Digital Transformation Office (DTO), Pusdatin and other related departments, and local health departments to ensure compliance with data standards and regulations, as well as propose mechanisms to integrate the workflow on the digital tool with existing platforms, such as Surabaya’s PWS Kesehatan.
- Produce a change management plan including communication, training, and support strategies; then, provide on-field support to train cadres and help them make the best use of the digital tool.
- From cadre feedback after usage, iterate and improve the digital tool as best as possible to ensure sustainable use of tool.
- Produce an English-written report on the deployment of the tool, including lessons learned and potential future improvements needed.
- Produce data needed for PATH’s technical team to calculate the scaling up cost model and return on investment cost model.
- The solution is to be deployed in Surabaya, East Java and Keerom, Papua.
Deliverables

1. **General deliverables**
   a. Deployment of the solution addressing the main points above and maintenance of the tool and any accompanied solutions (e.g. back-end) on cloud-based platforms (e.g. AWS, Microsoft Azure, Google Cloud, …) during the period of deployment.
   b. Comprehensive documentation on the implemented solution, including architecture, configuration, and maintenance procedures.
   c. Training materials and user guides for administrators and end-users on the deployment and use of the solution.
   d. Source code and all related materials of the digital tool.

2. **Hosting of related resources and deployment on mobile app stores**
   a. Technical and financial proposal showing resources needed to continue hosting related resources, including its necessary data assets and an estimation for the continued hosting of the infrastructure setup, on the selected cloud service.
   b. Technical and financial proposal showing experience and resources for enabling deployment and maintenance of the tool on the Apple App Store and Google Play Store, complying with the mobile stores’ regulations both internationally and locally to Indonesia. Provide alternative solutions if/when needed.

3. **Integration of data and data standards compliance**
   a. Show desk research in technical proposal on needed compliance with health care data standards as mandated by the Indonesia MoH, including expectations of future integration between community-level data produced by this digital tool and health care facility-level data standards needed for hospital information systems to enable referral linkage between community and health care facilities.
   b. Showcase this integration of data by working with Surabaya Dinkes to send data from the application to Surabaya’s PWS Kesehatan, and work within technical working groups to ensure the data is displayed in the puskemas’ and pustu’s Simpus system.
   c. Documentation on data standards used in digital tool, including application programming interfaces (APIs) for enabling data integration with existing national health care platforms.

4. **On-field training and improvement of tool from feedback**
   a. Training of cadres in Surabaya and Keerom to use the digital tool.
   b. Collecting feedback from cadres after usage of the digital tool.
   c. Improve the digital tool based on feedback.

5. **Data collection**
a. Produce data from the digital tool’s usage required for cost modelling.

The deployment of the digital tool on cloud-based infrastructure services such as AWS provides a high degree of replicability and scalability. The success of the digital tool will also imply higher demand and variable costs. Given the vendor cannot predict this uptake, the technical and financial proposal shall allow for access by a minimum of 150 users in Surabaya and 50 users in Keerom. The vendor should allocate sufficient variables cost to accommodate for a baseline demand.

Estimated Timing

- Based on technical and financial proposal
- Proposed start date: July 2024
- Proposed end date: March 2025

Eligibility

Only Indonesia-based firms with Indonesian staff can apply for this opportunity due to travel restrictions for Keerom, Papua.

Qualifications

To be considered for these terms of reference (ToR), vendors shall meet the following qualification requirements:

1. Proven track record in providing HCD-guided information technology (IT) solutions, especially in health care solutions.
2. Experience in working with offline mode-enabled mobile applications deployment.
3. Experience working with health care facility(ies) and/or community health worker(s).

To be considered for the ToR, vendors’ staff shall meet the following qualification requirements:

1. A team leader with at least 5 years of experience in managing software development teams.
2. A team of at least 2 software developers with at least 3 years of experience in developing mobile applications.
3. A team of a reasonable amount of support officers, such as business analysts, testers, quality assurance, support staff.
4. Strong written and verbal communication skills in English for the team leader.
5. Specific experience by team members of similar assignments with relevant healthcare applications would be an advantage.

The vendor can take the form of a joint-venture or another form of combined proposal with clear definition of roles and responsibilities. If the vendor does not have specific skillsets for application development, product thinking design, and change management, they can work with other firm/consultant(s) that can provide those services.